INFRARED SPECTROSCOPY OF ALANINE IN SOLID PARAHYDROGEN

SHIN YI TOH, YING-TUNG ANGEL WONG, PAVLE DJURICANIN, TAKAMASA MOMOSE, *Department of Chemistry, University of British Columbia, Vancouver, BC, Canada.*

Amino acids are the building blocks of biological molecules, and thus the investigation of their physical and chemical properties would allow for further understanding of their functions in biological systems. In addition, the existence of amino acids in interstellar space has been discussed for many years, but it is still under intense debate. The effect of UV radiation on amino acids is one of the keys for their search in interstellar space, where strong UV radiation exists. In this experiment, conformational compositions of alpha and beta alanine and their UV photolysis were investigated via matrix-isolation FTIR spectroscopy and quantum chemical calculations. Solid parahydrogen was used as the matrix, which provides higher resolution spectra than other noble gas matrices. We have identified several stable conformers for both alpha and beta alanine in solid parahydrogen. A clear correlation between conformational ratio and sublimation temperature was found for beta alanine. Furthermore, it was found that UV photolysis of alanine yields not only its conformational changes, but also photodissociation into a CO_2 molecule and fragments. Observed spectra and their analysis will be discussed in relation to interstellar chemistry.